At cross-purposes: subsidies and climate compatible investment

Shelagh Whitley

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Promoting Effective Climate Finance: ODI is building an evidence base on climate finance delivery and management through a number of country case-studies. How climate finance is accessed, managed and then spent in ways that effectively reduce vulnerability, promote development and gender equity, and reduce greenhouse gases represents a major challenge for national governments as well as the international community. The tracking of this finance, at both the international and national level, faces the problem that climate-related actions are difficult to identify with precision, and this lack of clarity leads to uncertainty over estimates of spending. This series of papers explores the concept of 'climate finance' and proposes pragmatic ways forward that will strengthen the policy debate.

Publication in this series:

1. Watson, C., September 2012. Defining climate-related forest activities, finance and expenditure in national budgetary systems. ODI, London. Available at: http://www.odi.org.uk/publications/6789-climate-finance-forests-expenditure-budgets-redd-climate-change.
2. Jones, L., Mitchell, T., Villaneuva, P.S. and Standley, S., September 2012. Coding and tracking adaptation finance. ODI, London. Available at: http://www.odi.org.uk/publications/6818-adaptation-finance-international-national-climate-change-tracking.
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Contents

Acronyms

ADB	Asian Development Bank
AECF	Africa Enterprise Challenge Fund
AGF	UN Secretary-General's High-Level Advisory Group on Climate Change Financing
AMC	Advance Market Commitments
APEC	Asia-Pacific Economic Cooperation
BNEF	Bloomberg New Energy Finance
CDM	Clean Development Mechanism
CETF	Clean Energy Transition Fund
COP	Conference of the Parties
CP3	Climate Public Private Partnership
CPI	Climate Policy Initiative
DI	Confederation of Danish Industry
EAIF	Emerging Africa Infrastructure Fund
ECA	Export Credit Agency
EE	Energy efficiency
EFR	Environmental Fiscal Reform
EITI	Extractive Industries Transparency Initiative
ExIm	Export-Import Bank (United States)
ERPA	Emissions Reduction Purchase Agreement
FAO	United Nations Food and Agriculture Organization
GCPF	Global Climate Partnership Fund
GEF	Global Environment Fund
GEF ASFF	Global Environment Fund Africa Sustainable Forestry Fund
GGF	Green for Growth Fund
GSI	Global Subsidies Initiative
IaDB	Inter-American Development Bank
IATI	International Aid Transparency Initiative
ICCF	Interact Climate Change Facility
IEA	International Energy Agency
IFC	International Finance Corporation
IFC AMC	International Finance Corporation Asset Management Corporation
IFI	International Financial Institution
IISD	International Institute for Sustainable Development
MIGA	Multilateral Investment Guarantee Agency
NAMA	Nationally-appropriate Mitigation Strategy
NDB	National Development Bank
NEXI	Nippon Export and Investment Insurance (Japan)
OCI	Oil Change International
OPEC	Organization of Petroleum Exporting Countries
OPIC	Overseas Private Investment Corporation (United States)
PE	Private equity
PPAs	Power purchase agreements
PPPs	Public Private Partnerships
OECD	Organisation for Economic Co-operation and Development
RE	Renewable Energy
REAF	Renewable Energy Asia Fund
SGG	San Giorgio Group
UNFCCC	United Nations Framework Convention on Climate Change
VER	Verified emissions reduction

1. Executive summary

There is widespread consensus that the private sector must be mobilised to support climate-compatible development (CCD). There is also broad acknowledgment, however, that we have only limited information and data on how best to achieve this goal. To date, the discourse on climate finance in general, and on private climate finance (PCF) in particular, has barely acknowledged the use of subsidies as tools to mobilise the private sector.

This paper highlights the implications of the current separation of the discourses on PCF and on subsidies, and the opportunities that exist to unlock climate-compatible investment by linking these fields.

Though climate finance aims to enable CCD, this paper points out that, within developing countries, subsidies to fossil fuels (alone) currently dwarf any efforts toward CCD through climate finance.

- For the 42 developing countries where data are available on either subsidies or climate finance, the scale of fossil-fuel subsidies to consumers, at $396 billion in 2011, is **75 times** higher than the average annual approved climate finance of $5 billion from 2010-2012.
- **Five countries** (China, Egypt, India, Indonesia and Mexico) appear in both the list of top 12 recipients of climate finance and the list of top 12 providers of fossil-fuel subsidies to domestic consumers.

There has been limited acknowledgment in the climate finance community that current subsidies for fossil fuels (among others) undermine CCD. It is essential to understand these 'climate-incompatible' subsidies before designing interventions to mobilise PCF, and there is significant potential to support reform of fossil-subsidies (and other subsidies) through enhanced transparency.

Many of the instruments used to mobilise PCF at present can be seen as 'climate-compatible' subsidies. However, the methodologies that are being used to estimate 'climate-incompatible' subsidies have not been applied to track efforts to mobilise PCF, and lesson-learning across sectors on the effectiveness of subsidies in mobilising private investment has been limited. This paper also outlines how existing definitions and subsidy estimation practices can support current efforts to track, report on and assess public efforts to mobilise PCF.

Attempts to track and rationalise subsidies and mobilise PCF can be mutually reinforcing. Based on a reform of subsidies, a level playing field can be created for private investment in CCD. Reporting under the United Nations Framework Convention on Climate Change (UNFCCC) and through other international bodies can be a channel to track both climate finance and subsidies in developing countries. Finally, climate finance can be used as a resource to support transparency and as a lever to encourage subsidy reform.

There is growing momentum, with institutions including the United Nations, OECD, the European Community, the G-20, the International Monetary Fund and World Bank all acknowledging the need to eliminate climate-incompatible subsidies, and developed country governments committing significant finance to support CCD. We must take advantage of this opportunity and these resources to support developing countries in their efforts to reduce emissions and build resilience – quickly and at scale.

2. Mobilising private climate finance (PCF)

Developed countries have committed to mobilise $100 billion annually in long-term climate finance to address the needs of developing countries by 2020. However, recent studies show that the commitments made under the UN Framework Convention on Climate Change (UNFCCC), and the current scale of finance, are not enough to address the mitigation and adaptation needs of developing countries (UNFCCC, 2012b). While estimates of the scale of climate-financing needs vary substantially, depending upon the assumptions and methodologies used, current estimates of the costs of addressing climate change in developing countries alone range from $0.6 to $1.5 trillion per year (Nakhooda, 2012; Montes, 2012). These estimates are 5-10 times higher than the prospective annual flows under the UNFCCC agreements, and 3-5 times higher than estimates by the Climate Policy Initiative (CPI) of the current global climate-finance flow in 2010/11 of $364 billion, of which two-thirds is coming from the private sector (Buchner et al., 2012a).

The climate-finance commitments made by developed countries under the UNFCCC are very small relative to the overall investment shifts that are needed. However, there are other strategic drivers of climate-compatible development (CCD) beyond the UN agreements as countries (developed and developing) seek to mobilise investment to: improve energy security and access to energy; reduce local pollution; 'green' their growth; improve resource efficiency; access resources through carbon markets; promote new technologies; develop strong companies and industries; and improve resilience.

Box 1: Defining private climate finance

The terms 'climate finance' and 'private climate finance' have not been defined under the UNFCCC. For the purposes of this paper, however, we use the following definitions.

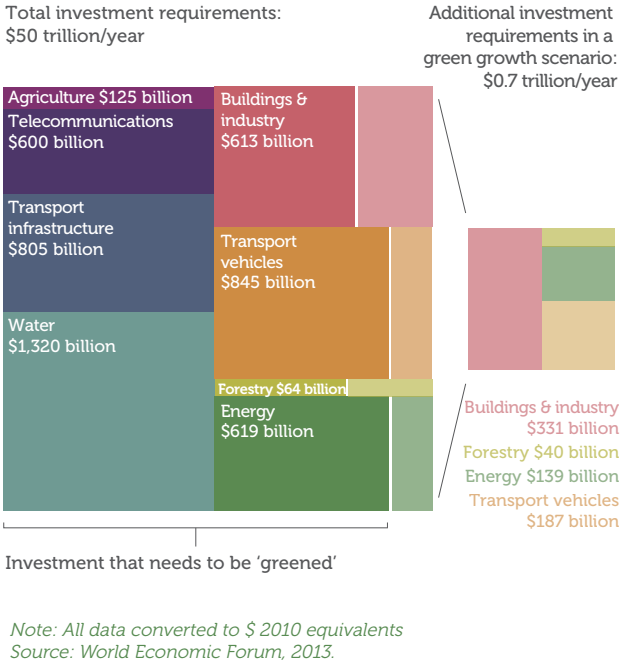
Private climate finance (PCF) = private investment in climate-compatible development

Climate-compatible development (CCD) = development processes that safeguard development from climate impacts (climate-resilient development) and reduce or keep emissions low without compromising development goals (low-emissions development) (CDKN, 2013).

There is widespread acceptance that significant increases in financial resources are needed to help countries undertake CCD and that most of this funding needs to come in the form of private climate finance (PCF) (Box 1) (High Level Advisory Group on Climate Change Financing, 2010b; Mabey, 2012; UNFCCC, 2009; UNFCCC, 2012). This is because the private sector is seen to have significant resources and capacity for investment, as well as high levels of efficiency, managerial capability and operational power that can be harnessed to achieve certain goals, including those for CCD.

Research by the Organisation for Economic Co-operation and Development (OECD), the World Economic Forum (WEF), and the McKinsey Global Institute has looked more broadly at the gaps in investment that need to be filled to move from 'business as usual' (BAU) to green growth / low carbon scenarios (Figure 1). The OECD has found that, despite virtuous cycles that could reduce investment costs over time[1]; the greatest incremental costs of low-carbon development will be in sectors where much of the cost would be borne by the private sector (Kennedy and Corfee-Morlot, 2012). It is critical that this additional PCF is mobilised quickly toward the key sectors for CCD (Box 2), as delayed reductions in greenhouse-gas (GHG) emissions mean higher costs and fewer options, as well as the need for deeper cuts in emissions (Stern, 2006).

Figure 1: Total estimated 'business as usual' investment requirements and additional investment under a 2°C scenario



Note: All data converted to $ 2010 equivalents
Source: World Economic Forum, 2013.

1. The OECD research found that the additional costs of going 'green' could be offset by reduced investment in roads, airports, and oil and natural-gas infrastructure under low-carbon growth. Three interactions are central to this growth: 1) technically, increased generation of low-carbon electricity enables greening of buildings and transportation vehicles; 2) decreased demand for oil and natural gas reduces the capital requirements for new infrastructure in these sectors; 3) alternatively, this capital can be invested in greening the electricity sector, which decreases demands for coal (Kennedy and Corfee-Morlot, 2012).

Though public sector resources are small when compared to those from the private sector, they are acknowledged to play an essential role in catalysing private sector investment and activity.

The primary justification for the role for the public sector in mobilising PCF is the failure of most actors to account for social and ecological externalities (including the failure to price GHG emissions) (The World Bank, 2012). Ignoring these externalities creates institutional and policy barriers to CCD, and increases (actual or perceived) risk in investing in key sectors (Box 2). The UN Secretary-General's High-Level Advisory Group on Climate Change Financing (AGF) and the G-20 Finance Ministers, among others, have carried out extensive work on the barriers to PCF (Box 3) and on approaches the public sector can take to attract investment from the private sector, through reducing risks and increasing rewards and returns (Glemarec, 2011).

Though recent studies have provided early evidence that public policies and resource injections can attract PCF at scale by overcoming real and perceived risks, within the global landscape of climate finance to date only $16-23 billion has been identified as originating from the public sector in 2010/11 with the explicit goal of catalysing PCF (Buchner et al., 2012b; Buchner et al., 2012a).

There may be other additional funds that are being used to mobilise PCF, but there are no consistent and comprehensive data to track these financial flows. Early research by ODI suggests that issues of commercial confidentiality and regulatory restrictions may make tracking finance to mobilise the private sector even more challenging than tracking finance directed toward public actors (Whitley, 2013a).

Box 2: Key sectors for climate-compatible development (CCD)

CCD will be fostered most actively within six key sectors, and it is in these sectors that progress towards CCD needs to be tracked most closely:

- energy (new clean sources and increased efficiency of generation, transmission and use)
- transport (improving efficiency and promoting modal shifts for both freight and passenger)
- built environment (improving the energy efficiency of buildings)
- waste management (including use of waste for energy)
- construction (promoting climate resilience)
- agricultural land use and forestry (carbon sequestration).

Source: Patel, 2011

This lack of information is one of the most significant barriers to understanding the effectiveness of existing initiatives by the public sector to mobilise PCF. Without information on where public sector funds come from and where they have been used to mobilise PDF in developing countries, it is virtually impossible to assess their effectiveness, learn lessons or replicate good practice.

The rest of this paper aims to highlight the lessons that can be learned from the field of subsidy estimation and tracking that can be applied directly to efforts to mobilise additional PCF in developing countries and track financial flows.

3. Wider role of the public sector in mobilising the private sector

Recent discourse on climate finance has acknowledged this role of the public sector in mobilising the private sector in key sectors identified for CCD (see Box 2), but there has been less recognition that this role exists across all sectors and industries. Globally, a significant portion of the private sector depends in some way on support from the public sector. Lessons from this broader base of experience and sectors are critical for the rapid mobilisation of PCF.

One term that has been used, historically, to describe public sector interventions to mobilise the private sector toward specific goals is 'industrial policy'.[2] This is used

Box 3: Barriers to private climate finance (in developing countries)

- Unstable political climate, political risks.
- Weak enforceability of contracts and agreements.
- Absence of intellectual property rights.
- Lack of well-established / resourced regulators in key sectors for climate-compatible development.
- Poorly-developed physical and information infrastructure.
- Technology development risks.
- High start-up costs (agency problems).
- Distortionary subsidies.
- Lack of liquid debt and equity markets.
- Lack of consumer finance.
- Information gaps and asymmetries.
- Skills gaps / limited technical expertise.
- Volatile commodity prices, interest and exchange rates.

Sources: Brown et al., 2011; de Nevers, 2011; Deutsche Bank Climate Change Advisors, 2011; Lyon et al., 2011; Liebreich, 2011; Patel, 2011; Sierra, 2011; World Economic Forum, 2013.

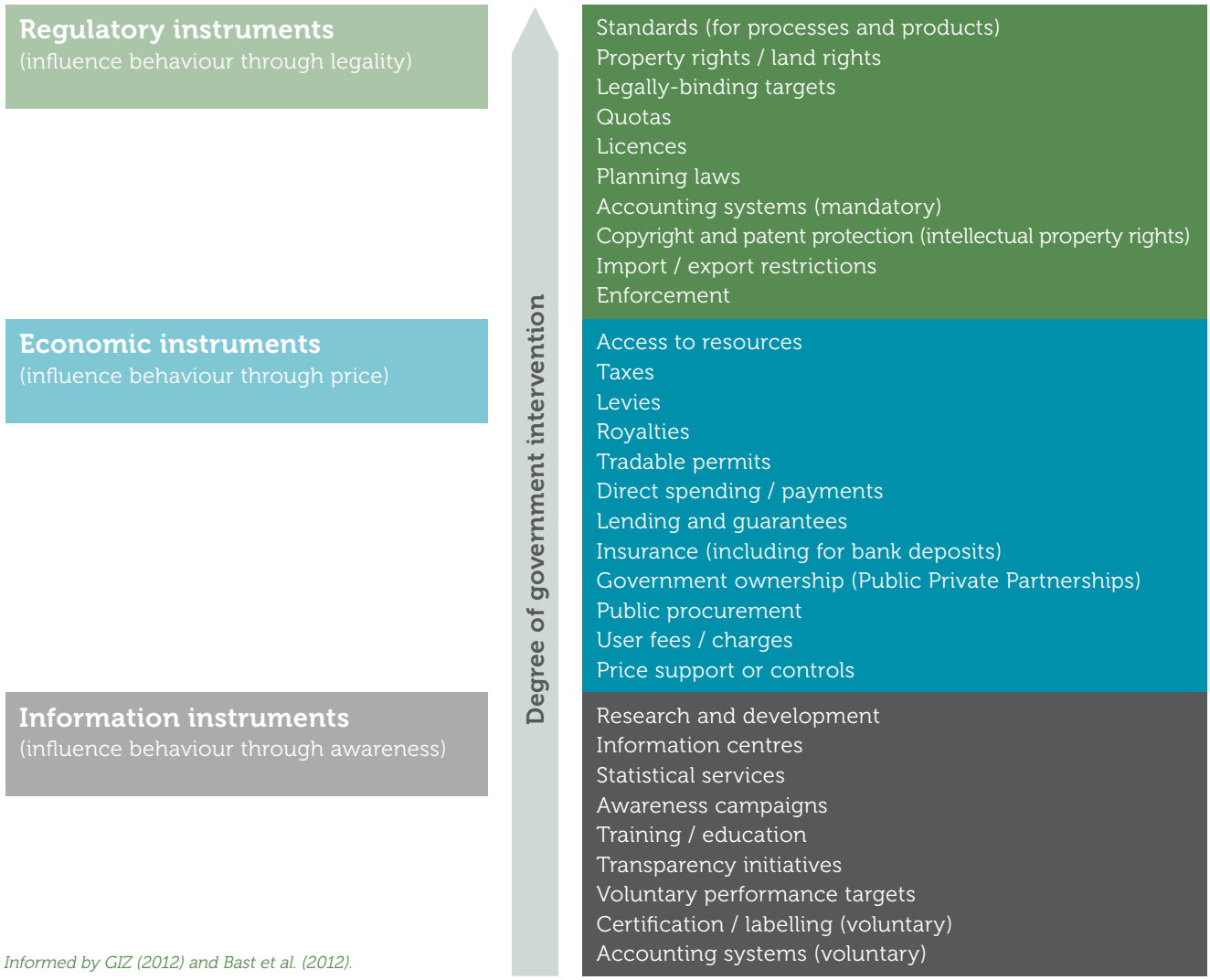
2. Definitions of industrial policy: government efforts to alter industrial structure to promote productivity-based growth (The World Bank, 1993). Concerted, focused, conscious efforts on the part of government to encourage and promote a specific industry or sector with an array of policy tools (UNCTAD, 1998). Any type of selective intervention or government policy that attempts to alter the structure of production toward sectors that are expected to offer better prospects for economic growth than would occur in the absence of such intervention (Pack and Saggi, 2006)

widely to support private actors, and is justified (by proponents of free markets) on the basis that there is room for government intervention to ensure socially efficient outcomes in the case of market failures, market distortions, or where markets are incomplete (Pack and Saggi, 2006).

Industrial policy is a more general term than subsidies, and most (but by no means all) subsidies fall under the category of economic instruments (Figure 2). A subsidy is any financial contribution by a government, or agent of a government, that confers a benefit on its recipients (WTO, 1994). Annex 1 provides a typology of subsidies with basic definitions, compiled by the Global Subsidies Initiative (GSI) of the International Institute for Sustainable Development (IISD).

For non-experts, language can create one of the first barriers to understanding and unpicking 'industrial policies' and 'subsidies'. This is often the result of the negative associations of these terms, and the potential for legal challenge of subsidies within the World Trade Organization (WTO) that can drive policy-makers and their advisors to seek euphemisms or synonyms for these terms. GSI has stated that 'incentive' is a common term for 'subsidy', but others (ranging from general to technical) include: support, aid, assistance, fiscal policy and fiscal instruments. For example, the recent World Bank report on *Inclusive Green Growth* uses the term 'incentive' instead of subsidy when discussing the instruments required for green growth (The World Bank, 2012). The Bank's reference to the need for a combination of 'imposing, incentivizing, and informing' can be seen to parallel the 'regulatory, economic and information' instruments of industrial policy outlined in Figure 2.

Figure 2: Instruments of industrial policy



Informed by GIZ (2012) and Bast et al. (2012).

Table 1: Subsidy categories and types, and links to climate finance instruments (see Annex 1 for definitions of subsidy types)

Subsidy category	Subsidy type (see Annex 1 for definitions)	Context: National (domestic) and/or International (donor driven)	Instruments to mobilise private climate finance (PCF)[3]	Examples of interventions to mobilise private climate finance (PCF) in developing countries, 2010-2012[4]
1. Direct transfer of funds	Grants	National and international	Grants and reimbursable grants.	Africa Enterprise Challenge Fund (AECF) and the UK-ADB (Asian Development Bank) Private Sector Guarantee Partnership (grant funding used to increase uptake of ADB risk guarantee facility).
	Other direct transfer of funds	National and international	Support to research, development and deployment (RD&D); knowledge management programmes (technical assistance, capacity building, information centres).	Technical Assistance Facility for the Climate Public Private Partnership (CP3 Programme).
2. Credit-related subsidies	Interest rate subsidies	National and international	Concessional loans (to projects and financial intermediaries).	See Whitley (2013b) for details of concessional loans to projects, programmes and financial institutions in developing countries by Germany, Japan, the UK and US.
	Preferential loans	National and international	Local currency loans; concessional loans (to projects and financial intermediaries); debt funds and facilities; lines and letters of credit.	See Whitley (2013b) for details of loans to projects, programmes and financial institutions in developing countries by Germany, Japan, the UK and US.
	Debt forgiveness	National and international	Not widely discussed.	To be identified.
	Export insurance	International	Export credit insurance; export credit guarantees.	Overseas untied loan insurance and guarantees provided by the US Export-Import Bank and Japan's Nippon Export and Investment Insurance (NEXI).
	Loan guarantees and insurance programmes	National and international	Political risk, credit risk and sovereign guarantees; insurance (to projects and financial intermediaries); weather and currency-hedging products.	US Overseas Private Investment Corporation (OPIC) guarantees to the Renewable Energy Asia Fund (REAF) and the Mekong Renewable Resources Fund. See also 5 below.
3. Government equity participation	Government equity participation	National and international	Equity and quasi-equity (mezzanine finance); participation in private equity (PE) funds and venture capital funds; 'Public Private Partnerships'; any government ownership of assets; green / climate bonds (tax free / lower interest rate).	See Whitley (2013b) for German, UK and US equity participation in a range of funds: Clean Energy Transition Fund (CETF); Climate Public Private Partnership Asia (CP3 Asia); Confederation of Danish Industry (DI) Frontier Market Energy & Carbon Fund; Emerging Africa Infrastructure Fund (EAIF); Global Climate Partnership Fund (GCPF); Green for Growth Fund (GGF); Global Environment Fund Africa Sustainable Forestry Fund (GEF ASFF); International Finance Corporation Asset Management Corporation (IFC AMC) Climate Catalyst Fund; Interract Climate Change Facility (ICCF); and the Renewable Energy Asia Fund (REAF).

3. Buchner et al. (2012a), Karmali (2012), Whitley and Ellis (2012), Clapp et al. (2012).
4. Buchner et al. (2012b), Ernst and Young (2012), Frisari et al. (2013), Karmali (2012), KPMG (2012), Whitley (2013a).

Table 1: Continued

Subsidy category	Subsidy type (see Annex 1 for definitions)	Context: National (domestic) and/or International (donor driven)	Instruments to mobilise private climate finance (PCF)	Examples of interventions to mobilise private climate finance (PCF) in developing countries, 2010-2012
4. Revenue foregone or not collected (tax expenditures)	Accelerated depreciation and other tax deferrals	National	Preferential tax treatment for renewable energy (RE) and energy efficiency (EE) project developers.	Accelerated depreciation (AD) tax incentive for wind power projects in India (expired in 2012).
	Credits, refunds and exemptions from income tax	National	Preferential tax treatment for RE and EE project developers.	80% discount on taxes paid for distributing solar-generated electricity in Brazil.
	Exemptions and relief from indirect taxes	National	Preferential tax treatment for RE and EE project developers; border tax adjustments.	In China 50% refund of VAT is paid on the sale of wind power and 100% refund of VAT is paid on the sale of biodiesel oil generated by the use of abandoned animal fat and vegetable oil. VAT paid on the sale of goods produced from recycled materials or waste residuals is refundable.
5. Government provision or purchase	Government provision of goods and services	National and international	Foreign exchange and liquidity services; Insurance; provision of information instruments (see Figure 2).	Overseas Private Investment Corporation (OPIC) feed-in-tariff insurance, and Multilateral Investment Guarantee Agency's (MIGA) expropriation coverage (covering tariff risk for equity and debt providers).
	Government purchase of goods	National and international	Advance Market Commitments (AMC); energy off-take agreements.	Emissions Reduction Purchase Agreements (ERPAs) - forward purchases of carbon credits (compliance and voluntary), and Power Purchase Agreements (PPAs).
6. Income or price support	Income or price support	National and international	RE and EE obligations, feed-in tariffs; emission / carbon trading schemes (with or without price floors); tradeable certificates (RE credits, white certificates for energy-efficiency etc.); payment for ecosystem services.	Feed-in-tariffs are being used in more than 25 developing countries. South Africa and Brazil use a reverse auction approach to ensure the cost-effective use of public funds. Prosol in Tunisia (CPI San Giorgio Group Case Study).

In discussions of climate finance, subsidies are referenced as a sub-set of the instruments that can be used to mobilise PCF, when in fact most instruments referenced in the discourse on climate finance fall under one or more category of subsidy (Table 1).

As already mentioned, there is a strong focus on addressing market failures and distortions in the discourse on PCF. However, instead of framing these in the widely-recognised and agreed terms and definitions of industrial policy and subsidies outlined in Figure 2 and Table 1, there is a discussion of 'barriers to investment' (see Box 3), and the corresponding need for:

- 'tools to mobilise the private sector'
- 'innovative instruments to leverage private capital'
- 'de-risking tools to catalyse private capital'
- 'investment grade national policy frameworks'
- 'supportive business environments'
- 'smart targeted public sector interventions'.

de Nevers (2011), Karmali (2012), Patel (2011), Sierra (2011), World Economic Forum (2013), UNFCCC (2012), Whitley (2013b).

As a result, discussions in the climate change sphere create the perception that there is a particular problem of 'overcoming barriers to private finance'. This differs to the discourse on industrial policy where there is a more general acceptance that the public sector has a key role in mobilising the private sector, and that it is failures and distortions in 'real' as opposed to 'ideal' markets that must be overcome by interventions across all sectors and industries.

These discourses on PCF add to the perception that there are higher costs and risks to investment in climate-compatible development than in other parts of the economy or in BAU investments, and that solutions to these must be innovative (and have not been undertaken in the past). In reality, many are subsidies that are often applied to other sectors of the economy.

There are two implications in separating the discourse on PCF from that of subsidies:

- lesson-learning from other sectors on the effectiveness of subsidies in mobilising private investment has been limited, and methodologies for estimating subsidies have not, to date, been applied to PCF
- there has been limited acknowledgment that subsidies to fossil fuels (among others) within developing countries dwarf any efforts toward CCD development through climate finance at present, constituting a major impediment to private investment in CCD.

4. Subsidies and climate-compatible development (CCD)

4.1 Scale of subsidies

The McKinsey Global Institute estimates that governments are subsidising the consumption of resources (including water, energy, steel, and food) by up to $1.1 trillion per year at present[5], and that many countries commit 5% or more of their GDP to energy subsidies alone (Dobbs et al., 2011). These may be under-estimates, however, as global fossil-fuel subsidies alone were estimated to range from $775 billion to as much as $1 trillion in 2012[6] (Box 5) (Bast et al., 2012).

As highlighted in Box 5, there are significant gaps in both the data collected and the transparency of information on fossil-fuel subsidies, let alone for of other subsidies (such as those directed toward water, land-use, etc.), which have significant implications for CCD. However,

Box 5: Estimates of fossil-fuel subsidies in developing countries

Consumption subsidies in developing countries
$630 billion – reasonable estimates available

The figure cited most widely for fossil-fuel subsidies comes from the International Energy Agency (IEA), but covers only a sub-set of consumption subsidies for developing countries. The IEA expected this figure to reach $630 billion in 2012. This figure fluctuates widely, depending on the price of oil – it was $523 billion in 20011 and $409 billion in 2010 – although there is progress in reforming subsidies.

Production subsidies in developing countries
Estimates of between $80 and $285 billion annually – only high-level estimates available

While it is difficult to gauge the amount developing countries spend to subsidise production of fossil fuels, there are clearly a number of countries in the developing world where these subsidies exist. Countries such as Brazil, China, India, Indonesia, South Africa and others have large fossil-fuel production industries, often supported heavily by governments (if not state-owned entirely).

Support from International Financial Institutions (IFIs) and National Development Banks (NDBs)
Estimates range from $15 to $150 billion annually

As of 2010, Oil Change International, in its 'Shift the Subsidies' database, has identified over $15 billion in annual fossil-fuel support from international, regional and bilateral public financial institutions around the world. This database does not include lending from Brazilian or Chinese institutions and preliminary data indicate these countries may add $100 billion or more annually. It is unlikely that all of this financing actually qualifies as a subsidy, but the lack of transparency prevents a more thorough analysis at present.

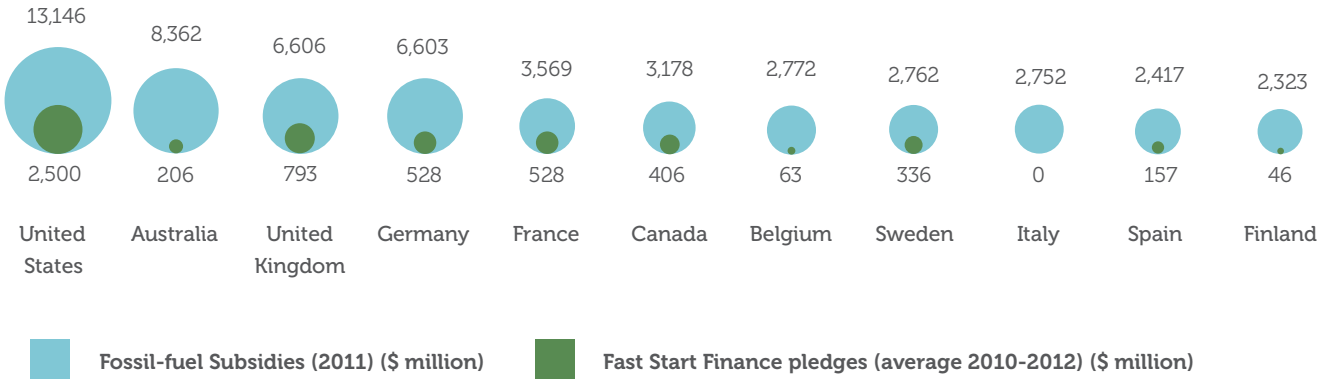
Support from Export Credit Agencies (ECAs)
Estimates range from $50 to $100 billion annually

ECAs are bilateral organisations that provide financial services to support the overseas trade and investment activities of private domestic companies. While exact figures on ECA support for fossil-fuel projects are difficult to obtain, ECA financing often dwarfs official development assistance and, historically, a large portion of projects have been fossil-fuel related. As with IFIs, it is unlikely that all of this financing actually qualifies as a subsidy, but again, lack of transparency prevents a more thorough analysis.

Source: Bast et al. (2012).

5. Based on data from the Organization for Economic Co-operation and Development (OECD), International Energy Agency (IEA), United Nations Environment Programme (UNEP), and the Global Water Institute.
6. Based on work by the Global Subsidies Initiative (GSI) and Oil Change International (OCI), and data from the OECD, IEA, Organization of Petroleum Exporting Countries (OPEC) and the World Bank.

Figure 3: Climate finance vs. fossil fuel subsidies (in developed countries)



Source: Adapted from Oil Change International (2012b).

we do know that the fossil-fuel subsidies for which we have most information are those directed toward consumers. Typically, these consumer subsidies lower the prices below what they would be in a 'free market' and are used predominantly in developing countries to lower the prices of fuel for transport, kerosene and liquefied petroleum gas (bottled gas) used in homes, or fuels used by electricity generators and domestic industries with strategic importance (Global Subsidies Initiative, 2010). Information on the methodologies used to calculate consumer subsidies at the national level can be found in Annex 2.

Subsidies directed toward producers are often less transparent than those directed to consumers[7] and usually take the form of preferential treatment for: 1) selected companies, such as national oil companies; 2) one domestic sector or product rather than others in the same country; and 3) sectors or products in one country when compared internationally, such as government incentives to attract foreign investment (Global Subsidies Initiative, 2010). Early findings from GSI research in Canada and Indonesia on upstream oil and gas indicate that the most common producer subsidies are in the form of government revenues that are foregone, such as reduced taxes for goods and services, allowances for accelerated depreciation, and reduced royalty payments (see Annex 1 for definitions) (Global Subsidies Initiative, 2010).

An important sub-set of subsidies to fossil-fuel producers in developing countries is provided by International Financial Institutions (IFIs), National Development Banks (NDBs), Bilateral Financial Institutions (BFIs), and Export Credit Agencies (ECAs) (Box 5). Many of these institutions also provide and channel climate finance and are involved in existing interventions and efforts to mobilise PCF (Whitley, 2013a).

Oil Change International completed analysis to compare climate finance flows during the Fast Start Finance period between 2010-2012 to provide further evidence of the contrasting role of donors and development finance institutions in incentivising CCD internationally while subsidising fossil-fuel consumption domestically (Oil Change International, 2012b). The results show that subsidies from the top 10 developed providers of domestic subsidies to fossil fuels are five times higher than climate finance transferred to developed countries (see Figure 3).

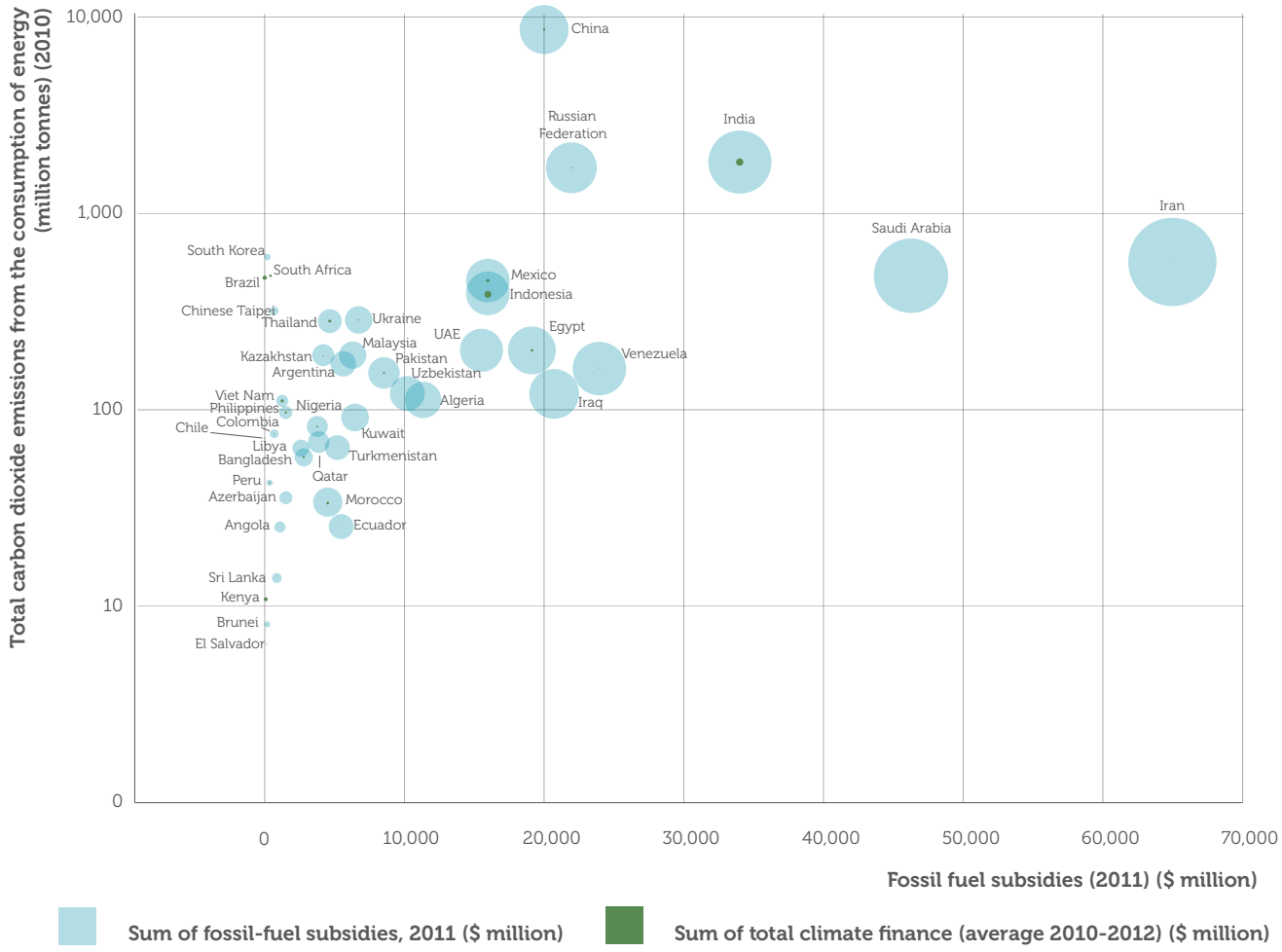
This is an interesting comparison, however domestic subsidies in developing countries will also have a significant impact on the effectiveness of climate finance, the investment climate in developing countries, and on the potential to mobilise PCF.

For this reason (and even though data are limited on volumes of climate finance committed to specific developing countries, as shown in Section 6, and on fossil-fuel subsidies in developing countries, as shown in Section 5), ODI has undertaken a parallel exercise to compare the scale of the following in countries for which data are available:

1. fossil-fuel subsidies directed to consumers (in 2011)
2. annual levels of approved climate finance[8] (average 2010-2012) (see Annex 3)
3. GHG emissions from energy use (in 2011) (see Figure 4).

7. In most countries (even those with significant levels of fossil-fuel production) subsidies directed toward consumers are significantly higher than those to producers. Indonesia is a typical example, even though it is an oil producing country. In 2008 consumer subsidies in Indonesia were estimated at $14 billion, whereas producer subsidies were one-seventh of that level, at $2 billion. One exception is Russia, where consumer and producer subsidies for fossil fuels were almost equal in 2010, at $17 billion and $14.4 billion respectively (International Energy Agency, 2012; International Institute for Sustainable Development, 2010).
8. Approved: represents funds that have been officially approved and earmarked to a specific project or programme. All approvals on figures are cumulative. www.climatefundsupdate.org

Figure 4: Fossil fuel subsidies, climate finance and greenhouse-gas emissions in developing countries



Source for emissions data: US Energy Information Administration, 2013. See Annex 3 for sources of climate finance data and fossil fuel subsidy data.

The results of this preliminary data analysis show that domestic fossil-fuel subsidies in most countries far exceed the volume of approved climate finance. For the 42 developing countries with available data on one or both of the indicators, the volume of fossil-fuel subsidies to consumers ($396 billion) is **75 times** that of average annual approved climate finance ($5 billion). **Five countries** (China, Egypt, India, Indonesia and Mexico) appearing in the list of top 12 recipients of climate finance are also among the top providers of fossil-fuel subsidies to consumers (Figure 4 and Annex 3). It remains to be seen, however, if the existing fossil-fuel subsidy regimes in these countries are being taken into account in the design of climate finance interventions to mobilise the private sector.

The rest of this Section examines the impact of fossil-fuel subsidies on the potential for CCD, and the potential for reform. Sections 5 and 6 will highlight existing initiatives to fill the information gaps on fossil-fuel subsidies, and examine how these initiatives could be linked with efforts to mobilise and track PCF.

4.2 Impact of subsidies

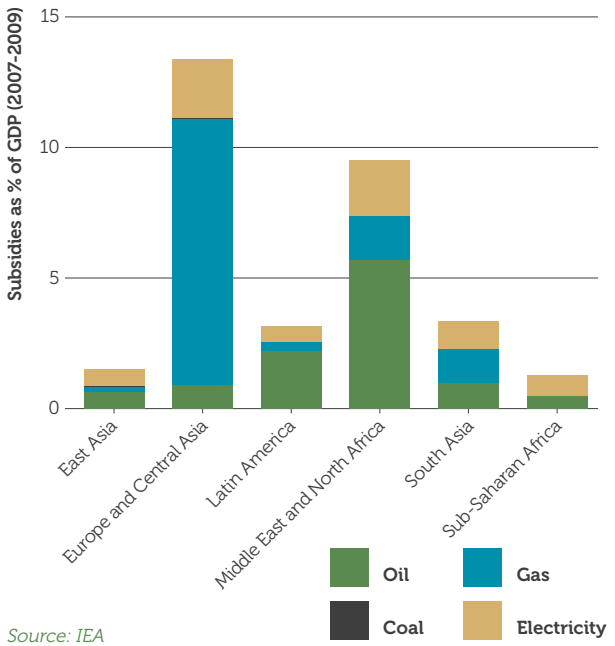
Recent high and rising fuel prices have led to the introduction or increase of energy subsidies across a broad spectrum of regions and political systems. For example, in India (which imports over 70% of its total fuel needs) maintaining diesel and petrol prices at 20-35% below international prices in 2011 implied a total fuel subsidy bill of around 10% of GDP (Commander, 2012). This increasing fiscal pressure over the past two to three years has led to a growing recognition that significant volumes of subsidies (to fossil-fuels and other resources) are inefficient and encourage wasteful consumption.

As well as being economically costly to taxpayers (see Figure 5), inefficient fiscal regimes (and a failure to put a price on externalities): damage the environment through increased emissions of GHGs and other air pollutants;

keep prices artificially low and result in higher energy consumption or production; amount to a *de facto* reward for carbon emissions; create barriers to entry for cleaner energy services; and hamper private-sector investment in resource productivity (Vagliasindi, 2013; Dobbs et al., 2011; OECD, 2011). The G-20 has highlighted the many negative climate impacts of fossil-fuel subsidies and, linking subsidies to climate change, a recent report by the International Monetary Fund (IMF) has stated that 'fossil-fuel subsidies (to consumers) are almost always bad policy, as even apart from the increase in emissions they cause there are generally better ways to help the poor' (de Mooij et al., 2012).

In 2009, as an initial response, the G-20 nations committed to '*phase out and rationalize over the medium term inefficient fossil fuel subsidies while providing targeted support for the poorest. Inefficient fossil fuel subsidies encourage wasteful consumption, reduce our energy security, impede investment in clean energy sources and undermine efforts to deal with the threat of climate change*' (G-20, 2009). Subsequently, this statement has been reinforced by a leaders' statement from 21 Asia-Pacific Economic Cooperation (APEC) countries in 2010, and the establishment of the Friends of Fossil Fuel Subsidy Reform, a group of eight countries[9] that joined together to encourage the G-20 to continue to rationalise and phase out inefficient (consumption and production) subsidies, ensure that ambition levels remain high, and ensure that transparency remains an important guiding principle for the process (Global Subsidies Initiative, 2011).

Figure 5: Oil, coal, gas and electricity subsidies as a percentage of GDP (2007-2009)



Source: IEA

For the reasons highlighted above, subsidy removal has significant potential to create virtuous cycles. Recent research and analysis by the OECD have suggested that, from an economic perspective, removing price subsidies for consumers of fossil-fuels alone would:

- improve the efficient allocation of resources across economies
- reduce the financial burden on government budgets (through reduced public expenditure and increased tax revenues)
- alleviate the potentially distortive effects on competition, and
- allow most countries or regions to record real income gains and GDP benefits (as a result of a more efficient allocation of resources across sectors).
  (OECD, 2011)

From a climate-change perspective, this same research has found that eliminating fossil fuel subsidies by 2020 would reduce global GHG emissions in 2050 by 6% and that removing them has the potential to:

- lower the global cost of stabilising GHG concentrations
- shift economies away from carbon-intensive activities
- encourage energy efficiency; and
- promote investment in the development and diffusion of low-carbon technologies.
  (OECD, 2011)

4.3 Why subsidies exist and persist

The reform of subsidies remains a major challenge, despite the potential virtuous cycles that would result from the removal of fossil-fuel (and other) subsidies and the high-level commitments from both developed and developing country governments. The commitment made by G-20 leaders in 2009 was reiterated in 2012, but a recent study found that 'no country has initiated a subsidy reform specifically in response to the G-20, and that reporting of fossil fuel subsidies remains spotty' (Bast et al., 2012).

The reasons for the existence and persistence of subsidies vary across countries and regions (see below), but subsidies need to be understood in the context of a particular political economy logic. First, governments act to remain in power. Second, once subsidies are in place, interest groups solidify around them and hinder their reform (Victor, 2009).

9. Costa Rica, Denmark, Ethiopia, Finland, New Zealand, Norway, Sweden and Switzerland.

Several specific motivations for subsidy existence and persistence have been identified.

- **Income buffering.** Energy subsidies are often initiated as temporary income buffers. However, in the face of (increasingly common) price shocks and price volatility, they have become more permanent and difficult to reform or eliminate (Commander, 2012).
- **Industrial policy.** Using energy pricing as a component of industrial policy to support production in selected sectors or firms, or increasing the competitiveness of export-oriented firms through the under-pricing of energy inputs (Commander, 2012).
- **Diversifying energy supply.** Increasing diversity in energy supply through subsidies to specific energy sources. One example is Thailand's subsidies to gas prices and diesel with bio-fuel content, which aimed to reduce its dependence on fossil-fuel imports (Commander, 2012).
- **Transfers to the poor and increasing access to energy.** Consumer subsidies are often justified as a means of helping the poorest households or necessary to provide energy access, but recent studies show that these subsidies more often benefit the middle and upper classes than the poor in developing countries. Of the total consumption subsidies in 2010, the IEA found that only 8% reached the poorest 20% of income groups (International Energy Agency, 2011).
- **Lobbying.** Particular industries or companies often succeed in securing specific benefits, such as reduced energy costs. The benefits of these subsidies are often concentrated among specific actors, while the costs are spread across the general population (Commander, 2012). One example is in India, where cheap or free electricity to farmers creates a significant fiscal burden on the country as a whole, but where the farming lobby (which has political influence) has ensured that no government can win power without keeping these subsidies (Victor, 2009).
- **Institutions.** Governments often use subsidies because they lack other effective levers and/or institutional capacity to implement policy. In most countries, the price of energy is a simple indicator that is fairly easy for citizens to monitor, and so downstream subsidies are a visible way to deliver benefits in exchange for political support (Victor, 2009).
- **National patrimony.** In a number of fossil-fuel producing countries, revenue flows from natural resources have been seen as a national patrimony to be shared across the population in the form of subsidies (Commander, 2012). In the 1990s, major oil exporters spent twice as much on subsidising domestic petroleum (as a share of GDP) as countries that did not produce oil products (Gupta et al., 2003). For major energy producers, the opportunity costs of these subsidies are less evident than actual budgetary costs as revenues rise and fall with the costs of subsidy, giving little incentive for reform (Victor, 2009).
- **Information.** Citizens rarely have complete or accurate information on what they or others receive in terms of subsidies. This lack of transparency can, in turn, affect the political dynamics associated with revising or eliminating a subsidy (Commander, 2012). For example, survey and focus group evidence collected in Morocco in 2010 showed that few households were even aware of a butane gas subsidy, and that those that did know about it underestimated its scale by a wide margin (Commander, 2012).

4.4 Potential for subsidy reform

As outlined, the barriers to reporting on subsidies and to their reform are based on the multiple and often diverging interests of a wide range of stakeholders including government officials in both developed and developing countries, industry associations, companies, trade unions, consumers, social and labour political activists, and civil society organisations.

Actors interested in subsidy reform must, therefore, ensure support across this wide variety of actors and, as a first step, assess:

- the key attributes of the institutional and political system (how are energy-pricing decisions made, and by whom)
- those interest groups that would be rewarded or exposed to costs and risks as a result of reform
- the policy objectives of existing subsidies and their outcomes (or lack of them)
- the costs and distortions imposed on the economy by subsidies, and
- the political acceptability of reform (electoral cycle, level of information available to citizens) (Commander, 2012).

Timing, information provision and compensation are also important elements to reform, as subsidy reforms can have serious political repercussions if introduced too quickly, and without sufficient public support. This was demonstrated by recent events in Nigeria, when the (overnight) withdrawal of fuel subsidies sparked public unrest.

Consumer subsidy reform is possible but, if it is to be politically acceptable, it must be gradual, designed and

implemented with care, incorporate protections for middle- and lower-income households, and be based on a comprehensive strategy. The G-20 has recognised, specifically, the 'importance of providing those in need with essential energy services, including through the use of targeted cash transfers and other appropriate mechanisms' (G-20, 2009). It has also been found that international support can facilitate reforms by providing additional assistance to vulnerable groups (Bast et al., 2012). A number of developing countries, including Ethiopia, Ghana and Iran, have made some progress in the reform of consumer fossil-fuel subsidies in recent years using these tools (Vagliasindi, 2013; Global Subsidies Initiative, 2012; Guillaume et al., 2011).

Producer subsidy reform may be even more complicated in political terms than consumer subsidies, and faces stiff opposition in fossil-fuel producing countries, given the influence of industries on trade and finance ministries and their access to many levels and branches of government (Bast et al., 2012). In addition, the ability to undertake producer-subsidy reforms is hampered by a basic lack of knowledge about the extent of support to fossil-fuel producers and where information on this support is held. A GSI research project found that fossil-fuel production is supported by a long list of subsidies that includes: direct payments; preferential access rights to energy deposits; credit and insurance support; caps on liabilities related to fossil-fuel enterprises; tariffs or export restrictions; government ownership of power generation; transmission or distribution assets and fuel stockpiles; support to bulk fuels transport; and health and safety oversight (Koplow et al., 2010). Reform is further impeded as the majority of these subsidies (though widely recognised as incentives - see Figure 2) are not clearly identified in standard government budget documents.[10]

5. Subsidy estimation: current practice

5.1 Initiatives at the national level

There is wide agreement that greater transparency of existing subsidies is needed to develop an account of current spending that can then be used to inform and justify reform efforts.

Subsidy analysis depends on data, often collected by governments at the national level. The primary sources for expenditure data are government financial statements, government departments' summary tables on expenditures, and national accounts. However, GSI research shows that few governments know the full extent of subsidies granted, as many forms of support have never been quantified. Where information does exist, it is scattered across different ministries, as well as regional and local governments, and is rarely available to the public, standardised, validated or accurate. Many forms of subsidies, including tax breaks and credit subsidies, are not included in official accounts, and the World Bank estimates that only a dozen countries provide regular reports on estimates of their tax expenditures (GSI, unknown). These problems are exacerbated in developing countries by poor budget transparency and limited resources for gathering data and estimating subsidies (Global Subsidies Initiative, 2010).

There is, at present, only limited information on subsidies in most developing countries to provide a basis for decision-making, or to support reallocation of these resources. To address these multiple barriers, a number of important initiatives on subsidy estimation and transparency have been established as the first step toward Environmental Fiscal Reform (EFR) in developing countries.

This paper does not provide specific guidance on reporting at the national level, but the IMF has provided early recommendations for policy-makers on how best to account for producer subsidies (de Mooij et al., 2012).

1. Subsidies should be recorded transparently in government accounts and, where appropriate, recorded and identified explicitly in the budget.
2. Off-budget subsidies should be identified and recorded in separate accounts. This may require improvements in the budget classification systems.
3. Arrangements whereby international or national oil companies provide subsidies to consumers without explicit budget support should be defined and described clearly in budget documents.
4. Transparency is vital for oil exporters where the opportunity cost of fuel subsidies is the revenue foregone by not charging international prices domestically.

To increase the level of publicly-accessible data on consumer subsidies in developing countries, the IEA is now tracking subsidies in 39 countries in its annual World Energy Outlook. This information is also available through the OECD/IEA website on Fossil Fuel Subsidies and Other Support (OECD and IEA, 2013) (see also Annex 3). Other actors, including the European Commission (EC), use the approach employed by the OECD/IEA inventory as a template to report information on measures that support the production or consumption of fossil fuels. The OECD also has a manual that is available to the public on its approach and methodologies to track and report subsidies in the agriculture sector (OECD, 2010).

To increase access to sub-national disaggregated information, GSI has published a series of 'Citizen's

10. There is a small group of oil producers that records fuel subsidies explicitly in the budget including Indonesia, Iran, Malaysia, Sudan, and Yemen (de Mooij et al., 2012).

guides to fossil fuel subsidies' covering Bangladesh, India, Indonesia and Nigeria. These guides are written in non-expert language to increase public understanding of subsidies (Global Subsidies Initiative, 2013). In certain countries, NGOs and journalists have been able to extract subsidy data that was not previously made public by governments through freedom of information laws (where they exist) (GSI, unknown).

Though not a developing country example, the 'Subsidyscope' database has been developed to increase transparency of subsidies in the United States. This resource includes information on US spending (grants, non-competed contracts, tax expenditures, and loans and loan guarantees) across 11 sectors: agriculture; education; energy; health; housing; national defence; natural resources and environment; science, space, and technology; transportation; finance; and non-profits (Pew Charitable Trusts, 2012).

This early work reveals four important conclusions at the national level:

- the results of subsidy estimation do not need to conclude an exact figure – ascertaining the order of magnitude can be sufficient to support governments in evaluating existing subsidies
- some countries may choose to retain some fossil-fuel subsidies that they deem 'efficient', but should reveal the subsidy and any rationale for its retention
- the processes of reporting and reform should be separated to facilitate transparency, and
- the only way to ensure comprehensive subsidy reporting will be through international agreement on common definitions and a common reporting format and methodology (Global Subsidies Initiative, 2010; Bast et al., 2012).

5.2 Initiatives at the international level

There are also a number of early initiatives that aim to support subsidy estimation and transparency at the international level. In an effort to support transparency on accounting methodologies, the GSI has catalogued the definitions and methodologies that are used by different governments and international organisations to estimate subsidies (see Annexes 1 and 2 for a summary of this work). This exercise can be seen as the first step towards the development of commonly-agreed methodologies and best practice to measure subsidies. This could, in the short-term, facilitate better monitoring and reporting of existing subsidies and, in the long-term, help countries track the progress of their efforts to phase out subsidies.

To this end, there have been calls for the establishment of an independent international body on fossil-fuel subsidies from a number of organisations (including from 75 NGOs in the lead-up to the G-20 Summit and Rio+20 Conference on Sustainable Development in 2012) (Price of Oil, 2012). It has been suggested that this international body should allow civil society participation and representation, and be transparent and balanced in representation from developed and developing countries, as well as being sufficiently empowered to assess commitments by countries (Bast et al., 2012).

6. Lessons from subsidy estimation for Private Climate Finance (PCF)

6.1 Lessons for mobilising PCF

The current discourse on climate finance is focused on assessing the investment climate for PCF by looking at incentives and subsidies on the CCD side of the equation, while ignoring, for the most part, current disincentives to CCD – incentives that actually support 'climate-incompatible' development.

References to the role of fiscal policies in mobilising PCF are often restricted to discussions on the potential use of carbon pricing, carbon taxes and EFR in developed countries as sources of climate finance. The arguments for using these tools to mobilise climate finance have been reinforced by the need to generate revenue in the wake of the financial and economic crisis, to relieve pressure from labour costs that could result from increasing income taxes and social security contributions, and to mitigate the impact of volatile commodity prices (GIZ, 2012; Dobbs et al., 2011).

There is only limited discussion of subsidies in developing countries in international fora, but links between subsidy reform in developed countries and climate finance have been discussed by the G-20 Energy Working Group, the UN High-level Advisory Group on Climate Change Financing and the UNFCCC Work Programme on Long-term Climate Finance.

- The High-level Advisory Group on Climate Change Financing has highlighted the revenue potential of the gradual removal of fossil-fuel production subsidies in developed countries. The group has emphasised that, as a source of climate finance, the elimination of fossil-fuel subsidies is a particularly beneficial tool as it is a domestic instrument that can allow finance to be disbursed more rapidly than tools that require significant international coordination. Subsidy removal can also be combined with carbon taxes, avoiding the potential for the double counting of revenue that can arise when carbon market instruments are

implemented alongside taxes (High Level Advisory Group on Climate Change Financing, 2010a).

- Members of the G-20 group have recognised that part of the revenue generated by the phasing-out of subsidies in developed countries could be used for climate finance, and have recommended that individual countries should have the ability to allocate funds based on their national budgetary procedures (G-20 Study Group on Climate Finance, 2012).
- The Long-term Climate Finance Work Programme has recognised that the removal of harmful and inefficient subsidies on fossil fuels in developed countries already has broad political support, and that it is a potential source of climate finance that could be made available in the near future. It has acknowledged that redirecting only a portion of the funds resulting from fossil fuel reform to climate finance would yield substantial resources (UNFCCC, 2012b).

As most subsidies are in developing countries, there is significant potential for domestic EFR in those countries to support the mobilisation of PCF. There are also considerable risks in the status quo of current PCF discussions and interventions, which overlook the distortions caused by these regimes. Existing subsidies can have a significant influence on the potential to mobilise private investment in CCD and, as highlighted in Figure 3 and Annex 3, these domestic subsidies in developing countries are often far more substantial than any climate finance on offer.

A reference to 'climate-incompatible subsidies' has been included (indirectly) within Climatescope, a diagnostic tool that is available to the public, which aims to 'assess the investment climate for climate investments' in developing countries. Launched in 2012 by the Inter-American Development Bank (IaDB), and Bloomberg New Energy Finance (BNEF), this tool focused initially on the clean energy market in Latin America and the Caribbean, and is meant to complement other tools for investors in developing countries.[11] The current version of this tool reviews fossil fuel and other 'climate-incompatible' subsidies indirectly through its indicator of energy 'price attractiveness'.[12] A similar Ernst and Young index (2012), which looks at country attractiveness for renewable investment in both developed and developing countries, also overlooks existing subsidies to fossil fuels, but includes these considerations indirectly through a scoring linked to energy prices for renewables.[13] Finally, the importance of understanding disincentives to CCD, has been recognised (in part) in the latest report on the Landscape of Climate Finance by CPI, which recommended an 'exploration of business-as-usual (brown) finance flows' in order to monitor progress toward CCD, including efforts to mobilise the private sector (Buchner et al., 2012a).

There is a significant gap in resources that are available to the public and that support assessments of the 'investment climate for climate investment' in developing countries, and this could have detrimental impacts on the design of interventions to mobilise PCF. The first step in making these assessments within a given country should be to undertake a detailed review or diagnosis of the local policy, regulatory and market context (Whitley and Ellis, 2012). This must include a review of the general environment for private investment and, therefore, examine existing subsidy regimes. Such a diagnostic should incorporate a review of local barriers, making it critical to include information on the current status of fossil fuel and other climate-incompatible subsidies. A broad set of short-term goals can be achieved by tracking those instruments and tools that are used at present to mobilise private support for both climate-compatible and 'incompatible' development. One of the benefits of using the tools and methodologies for tracking subsidies for these reviews is that it can facilitate the simultaneous review of these different (and often competing) drivers of private investment, and can enable lesson learning and replication of best practice across a wide range of sectors.

6.2 Lessons for tracking PCF

Climate finance has been a key topic in recent international climate negotiations, as developed countries have committed to the joint mobilisation of $100 billion per year by 2020 to meet the needs of developing countries. The goals of tracking climate finance are four-fold: to build trust by ensuring the delivery of financing promises; to show the feasibility and concrete benefits of CCD; to increase understanding of what effective climate finance looks like; and to provide governments and investors with the tools and knowledge required to replicate and scale-up the most effective models (Mabey, 2012; Buchner et al., 2012a).

However, there is a chronic lack of consistent and comprehensive data to track climate finance, and this is the most significant barrier to understanding the effectiveness of existing public sector initiatives to support CCD. In a recent report, Publish What You Fund has highlighted that this problem of 'hard to publish, hard to find, hard to use data' is common to both climate finance and development cooperation (Forstater and Rank, 2012).

11. The World Bank's Doing Business Rankings, Enterprise Survey, and Investors Across Borders Database; the World Economic Forum (WEF) Competitiveness Index; and Transparency International (TI)'s Corruption Perceptions Index.
12. According to Climatescope, high electricity prices are seen as a positive factor for the potential development of clean energy capacity in a country, and so the countries with the highest retail and wholesale electricity prices in the region receive the highest mark of 5, with all others benchmarked against them. Markets with low retail tariffs include Venezuela, where prices are impacted by heavy government subsidies (Bloomberg New Energy Finance, 2012).
13. On a weighted basis, the index considers power offtake attractiveness (19%) – this includes the price received and the potential price variation and length of Power Purchase Agreements (PPAs) granted. Higher scores are also achievable if a government guarantees the power offtake, rather than merchant offtakers (Ernst and Young, 2012).

The current lack of transparency in climate finance data is the result of both technical and political barriers, which are manifested most obviously through the absence of an agreed definition of 'climate finance', and of harmonised methodologies and templates for reporting and tracking (Clapp et al., 2012).

Though it is beyond the remit of the UNFCCC Work Programme on Long-term Climate Finance to establish a definition for climate finance, this group has called for more accurate (and comparable) information on how developed countries channel their climate finance, and for simple and manageable systems to monitor, report on and verify climate finance at the international and national levels (UNFCCC, 2012b).

A number of recent initiatives have tried to address the pervasive concerns on the transparency of both public and private climate finance.

- CPI has published annual reports on the *Landscape of Climate Finance* in 2011 and 2012, which include both public and private flows and, through its San Giorgio Group (SGG), has published a series of in-depth case studies to provide observations on how the public sector is already mobilising private investment in CCD (Buchner et al., 2012a).
- The Overseas Development Institute (ODI) has established the Climate Funds Update, a resource that tracks the activities of 22 dedicated climate funds, and has completed extensive reviews of climate finance directed from donors to both the public and private sector in developing countries during the Fast Start Finance period (2010 to 2012) (Climate Funds Update, 2013).
- ODI has also established a database of private climate finance support from Germany, Japan, the UK and US to developing countries. This resource provides details of 73 interventions that, taken together, represent $8.5 billion in public private investment (Whitley, 2013a).

This paper does not review the political barriers to tracking climate finance, but recognises that there are definitions and methodologies that could be applied directly to address current technical barriers. These definitions and methodologies arise from the field of subsidy estimation, and the links between subsidy types and climate finance instruments, and specifically instruments to mobilise PCF, are illustrated clearly in Table 1 (see also Annexes 1 and 2). Critically, the existing definitions and methodologies for subsidies cover a wide range of instruments that are relevant both domestically and internationally and that can, therefore be used to measure and track both climate finance from donors (through export credits, concessional loans etc.), and climate finance that is mobilised domestically (through eliminating tax expenditure, government equity participation, etc.).

7. Recommendations

7.1 Recommendations for mobilising PCF

It is critical that national level diagnostics that seek to 'assess the investment climate for climate investments' include subsidy assessment. To this end, ODI is developing methodologies over the next year as it expands its work on the national delivery of climate finance to include reviews of private finance flows in developing countries, and the instruments and tools used to mobilise private investment (including fiscal policies and subsidy regimes) (Bird et al., 2012a and 2012b) (see also Annex 4).

At present, climate finance is being deployed by a number of countries to support developing countries in undertaking such diagnostic studies under the rubric of 'climate-finance readiness'. Subsidy estimation should be the first element of 'readiness' assessment tools when used to assess the potential for mobilising PCF.

Climate finance can be a resource to build transparency around existing subsidies, by supporting subsidy assessments, tracking and reporting, and the completion of a diagnostic prior to disbursing funds to projects and programmes through bilateral or multilateral channels, including the private sector window of the Green Climate Fund (GCF).

Reporting on a broader range of subsidies under the UNFCCC (including those that are climate-incompatible) and tracking reform could support this work on 'investment climate' diagnostics. There is an opportunity for such inclusion: at COP 18 in Doha, parties to the UNFCCC were asked to consider the best approach for future reporting on climate-related private finance (UNFCCC, 2012b). As Non-Annex I Parties cannot be required to report on anything that Annex I parties do not report on, all Parties would, eventually, have to report to the UNFCCC on all types of subsidies, with Annex I countries starting by setting the best practice example (Bast et al., 2012). Given the greater flexibility for developing country governments to report on their 'national circumstances', the status of current subsidies could also be reported on in a sub-section of this submission, based on an agreed definition and common reporting format (Bast et al., 2012).

Finally, given the multiple climate benefits of reforming and rationalising fossil fuel and other climate-incompatible subsidies, the process of subsidy reporting and reform in developing countries could also be supported with

climate finance and recognised (and credited) as a Nationally Appropriate Mitigation Action (NAMA) or Low Emission Development Strategy (LEDS).

Such a deployment of climate finance toward subsidy tracking, reporting, reform and rationalisation could set off a virtuous cycle that fosters the deployment of significant additional domestic resources for inclusive CCD, while creating a level playing field for private sector investment.

7.2 Recommendations for tracking PCF

A set of universally agreed definitions and methodologies for tracking subsidies does not yet exist, but the approaches highlighted in this paper are being used at present by international organisations (see Table 1 and Appendix 1), and can be used in the short term while definitions of climate finance and subsidies are established and, ideally, harmonised.

Recent recommendations from the Civil Society-20 call for the use of a common subsidy definition agreed internationally, such as that contained within Article 1 of the WTO's Agreement on Subsidies and Countervailing Measures, which applies to the WTO membership of over 150 countries (Civil-20 Working Group on Environmental Sustainability and Energy, 2013).

The advantage of referencing existing definitions and methodologies for subsidies is that they cover a wide range of instruments that are relevant both domestically and internationally, thereby supporting the tracking of both climate finance from developed countries (through export credits, concessional-loans etc.), and climate finance mobilised domestically in developing countries (through eliminating tax expenditure, government equity participation, etc.) (see Table 1).

One of the first opportunities to use these existing definitions and methodologies is within the common template format agreed at COP 18 in Doha. This template was adopted by developed country Parties to the UNFCCC to report on their actions, including finance, capacity-building and technical support (UNFCCC, 2012a). A number of sections within this template could rely on the definitions and methodologies established in the field of subsidy estimation to track climate finance, particularly financial flows and interventions to mobilise PCF.

These include the following specific items from the common template:

- Table 3: *Progress in achievement of the quantified economy-wide emission reduction target*, which allows for the provision of information on mitigation actions and their effects, based on the name of the mitigation action, type of instrument (economic, fiscal, voluntary agreement, regulatory, information, education, research), and the estimate of mitigation impact (not cumulative, in kt CO_2 eq.) of the mitigation action.
- Tables 7, 7(a) and 7(b): *Provision of public financial support: contributions through multilateral channels, bilateral, regional, and other channels*, which allows for the provision of information on total amount, and financial instruments (including categories of grant, concessional loan, non-concessional loan, equity, and other).
- Table 8: *Provision of technology development and transfer support*, which allows for the provision of information on the recipient country and/or region, the source of the funding for technology transfer (private, public, and private/public actors), and on the activities undertaken (by private, public, and private/ public actors).

If the calls for an international body to develop common methods for subsidy accounting and reporting are heeded, there will be opportunities over the medium term for such an entity to build on the experience of inter-governmental agencies and non-profit initiatives. This could include building on the work of GSI, the G-20, IMF, Friends of Fossil Fuel Subsidy Reform and other actors that are already encouraging the tracking of, and reporting on, subsidies, as well as less obvious collaborators. These include the UNFCCC Secretariat, UNFCCC Work Programme on Long-term Climate Finance, the International Aid Transparency Initiative (IATI), and the Extractive Industries Transparency Initiative (EITI), who want to support developing country governments in the areas of transparency and the deployment of domestic and international resources toward CCD.

Finally, as new agreements are negotiated under the UNFCCC over the longer term, there is also likely to be an increased call for both developed and developing countries to report on action taken to address climate change, and for this forum to showcase success achieved through the use of different instruments (Bazilian et al., 2012). Agreement on definitions and methodologies for reporting will provide a critical foundation for these efforts.

8. Conclusions

There is widespread consensus that the private sector must be mobilised toward climate-compatible development (CCD). There is also broad acknowledgment that information and data available on how best to achieve this goal are limited. To date, there has also been limited acknowledgement of the use of subsidies as tools to mobilise the private sector in the discourse on climate

finance in general, and private climate finance in particular.

The goals of climate finance are to enable CCD, but this paper demonstrates that subsidies to fossil fuels (alone) within developing countries dwarf any efforts toward CCD through climate finance. This paper also highlights the implications of the current separation of the discourses on private climate finance (PCF) and on subsidies, and the opportunities that exist to unlock climate-compatible investment by linking these fields.

The first step that needs to be undertaken is an acknowledgement of the critical role that subsidies play in shaping the investment climate in any country, and how they are used to drive both climate-compatible and climate-incompatible development. The next step is to build comprehensive and comparable data sets on the use of these instruments in developing countries to fill the current information gaps that exist across these two disciplines. Such information is essential to enable policy-makers to remove current obstacles to private investment in CCD, and then to use these same instruments to foster such investment.

There has been a failure to recognise that most of the instruments used at present to mobilise PCF are subsidies (see Table 1). By acknowledging this fact, we can use the same definitions, methodologies and tools to fill the parallel gaps in our understanding of these instruments and expedite cross-sector lesson learning on the most effective instruments to mobilise private investment in CCD. ODI will support this shift by undertaking research and engagement at the international level and within developing countries to expand both the tracking and disclosure of subsidies (whether climate compatible or incompatible) in a manner that can inform and support policy-makers who seek to mobilise private investment.

There is current momentum, with institutions including the United Nations, OECD, the European Community, G-20, IMF and World Bank acknowledging the need to eliminate climate-incompatible subsidies, and developed country governments committing significant levels of finance to support CCD. We must take advantage of this opportunity and these resources to support developing countries in their efforts to reduce emissions and build resilience with speed and at scale.

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Annex 1: Subsidy categories, types and definitions

Category	Subsidy type	Definitions
1. Direct transfer of funds	1.1 Grant	A time-limited payment, either in connection with a specific investment, or to enable an individual, company or organisation to cover some or all of its general costs, or costs of undertaking a specific activity, such as research (GSI, unknown). This can include outright grants, reimbursable grants (related to asset acquisition and income), and forgivable loans (where conditions for forgiveness are likely to be met) (WTO, 1998; IASB, 2009).
	1.1 Other direct transfer of funds	Other direct payments may be linked to the volume of production or sales (US producers of liquid biofuels, for example, receive direct subsidies per gallon of ethanol). This can also include payments / vouchers for workers to prepare for, obtain and maintain employment (support for training, salaries and wages), and for necessities, like food, medicine or heating fuels (GSI, unknown). This category also includes debt forgiveness, loss coverage, assumption of legal obligations, and research and development (R&D) (WTO, 1998; FAO, 2010; UNSD, 2010; USFG, 2010).
2. Credit-related subsidies	2.1 Interest rate subsidies	Where government covers some or all of the interest cost of a commercial loan – over time or as a lump sum payment (WTO, 1998). Interest lost can be seen as a form of budgetary revenue forgone (OECD, 1995).
	2.2 Preferential loans	Government loan, where there is a difference between the amount that the firm receiving the loan pays on the government loan and the amount the firm would pay on a 'comparable corporate/commercial loan' (WTO, 1994). Debt concession schemes can include extensions of repayment periods, reduced collateral requirements, reduced interest on overdue debt, and partial write-offs (OECD, 2013).
	2.3 Debt forgiveness	Forgiveness of debt held by government or government-owned banks, relieving a company of its repayment obligations (EC, 1998). This subsidy is treated as a grant received on the date the debt is forgiven and measured as outstanding principal plus accrued interest (WTO, 1998). Where the entity forgiving the debt received shares in a firm, the benefit is determined in terms of equity infusions (see 3.1, government equity participation) (USFG, 2010).
	2.4 Export insurance	Provision of export insurance by the government where the premium rates charged by the government are inadequate to cover the long-term operating costs of the insurance facility and losses of the programme (USFG, 2010).
	2.5 Loan guarantees and insurance programmes	Governments may guarantee loans taken out by companies or individuals through commercial banks. That means that the government assumes the risk of default on the loan, rather than the bank, which in turn means that the bank can offer the borrower more favourable lending terms, such as a lower rate of interest. Governments also serve as an insurer as last resort for private investments (GSI, unknown). The guarantee or insurance shall also be considered as conferring a benefit where there is a difference between the amount that the firm receiving the guarantee pays compared to what it would pay on a comparable commercial loan (WTO, 1994).
3. Government equity participation	3.1 Government equity participation	Government provision of equity capital is considered as conferring a benefit if the investment decision can be regarded as inconsistent with the usual investment practice (including for the provision of risk capital) of private investors in the exporting country concerned (EC, 1998). If the government paid more than the relevant price for the equity, the cost to the government would be the amount of the overpayment. This overpayment would be treated as a grant for purposes of the calculation of *ad valorem* subsidisation (WTO, 1998).

Annex I: continued

Category	Subsidy type	Definitions
4. Revenue foregone or not collected (tax expenditures)	4.1 General principles	Government revenue that is otherwise due is forgone or not collected. This could include all mechanisms whereby the government generates revenue, including taxes, import and export duties, social security contributions, revenue from State-owned Enterprises, etc. (WTO, 1998). In countries with well-developed tax systems, subsidies provided by reducing companies' tax burdens are commonplace. Examples include tax exemptions (when a tax is not paid), tax credits (which reduce a tax otherwise due), tax deferrals (which delay the payment of a tax) along with rate relief and allowances/deductions. In common language, these preferential tax treatments are called tax breaks or tax concessions; public-finance economists refer to them as tax expenditures. In addition to increasing the complexity of tax systems, tax concessions are often criticised by economists as being less transparent than grants, and more resistant to change. Several national governments, and even a few sub-national governments, produce annual tax expenditure budgets (GSI, unknown). Each of these forms imply that some tax revenue is forgone and economic incentives are being provided, in much the same way as would happen with a programme involving budgetary expenditure. The definitions of tax concessions presume a counterfactual, i.e., the existence of a group of individuals or activity for which no such fiscal advantage is given (OECD, 2013).
	4.2 Accelerated depreciation and other tax deferrals	Certain tax measures defer income taxes from the current taxation year to a later one by, for example, accelerating deductions or by deferring income inclusions. Accelerated depreciation provisions, which allow assets to be written off over a period shorter than the effective economic life of the assets, are examples of tax deferrals. Accelerated depreciation arrangements have been important measures of assistance to capital intensive industries of manufacturing and mining (Australian Productivity Commission, 2002).
	4.3 Credits, refunds and exemptions from income tax	Programmes that provide for a full or partial exemption or remission of a direct tax (e.g., an income tax), or a reduction in the base used to calculate a direct tax, provide a benefit to the extent that the tax paid by a firm as a result of the programme is less than the tax the firm would have paid in the absence of the programme (USFG, 2010). Generally, when a government provides a tax break its budget is affected in much the same way as if it had spent some of its own money. The exception is a tax credit, which is worth more to a corporate recipient (and costs a government more) than a direct payment of an equivalent nominal value, as a direct payment raises a company's taxable income and therefore is itself taxable (GSI, unknown).
	4.4 Exemptions and relief from indirect taxes	The term indirect tax has more than one meaning. In the colloquial sense, an indirect tax, such as sales tax, a specific tax, value added tax (VAT), or goods and services tax (GST) is a tax collected by an intermediary (such as a retail store) from the person who bears the ultimate economic burden of the tax (such as the consumer. As an example, an excise duty on cars is paid in the first instance by the manufacturer of the cars; ultimately the manufacturer transfers the burden of this duty to the buyer of the car in the form of a higher price. For tax exemptions, deductions, holidays, and any similar measures, it is recommended that the cost to the government be measured as the amount of revenue that the government otherwise would have collected (WTO, 1998).

Annex I: continued

Category	Subsidy type	Definitions
5. Government provision or purchase	5.1 Government provision of goods and services	A subsidy shall be deemed to exist where a government provides goods or services other than general infrastructure. The provision of goods or services by a government shall be considered as conferring a benefit where the provision is made for less than adequate remuneration. The adequacy of remuneration shall be determined in relation to prevailing market conditions for the good or service in question in the country of provision (including price, quality, availability, marketability, transportation and other conditions of purchase or sale) (WTO, 1994). Often, the government is a monopoly supplier of a good or service - i.e., there is no private market against which the government's prices can be compared - which increases significantly the difficulty of determining whether a subsidy is involved (GSI, unknown). One important variant of an in-kind subsidy is privileged access to a government-owned or controlled natural resource. Primary industries benefit greatly from such access – for free or at a below market rate (mining, forestry, fishing, etc.) (GSI, unknown).
	5.2 Government purchase of goods	Governments practice preferential purchasing routinely, expressly favouring domestic over foreign suppliers of similar-quality goods by, for example, paying domestic suppliers higher prices or offering special financing arrangements (GSI, unknown). The purchase of goods by a government shall be considered as conferring a benefit where the purchase is made for more than adequate remuneration. The adequacy of remuneration shall be determined in relation to prevailing market conditions for the good or service in question in the country of purchase (including price, quality, availability, marketability, transportation and other conditions of purchase or sale) (WTO, 1994). To the extent that a government is found to have overpaid for goods in comparison with their prevailing market value, the cost to the government would be the amount of the overpayment (WTO, 1998).
6. Income or price support	6.1 Income or price support	There are a variety of income support schemes including unemployment insurance/compensation schemes, vacation support payments, minimum basic wage, and government-funded health programmes. Their value to the industry corresponds to the difference between the actual net income employees receive with the schemes as compared to how much they would have received without them (FAO, 2010). Transfers of money to producers are typically divided into two broad categories: those provided at a cost to government, such as grants and tax concessions, and those provided through the market as a result of policies that raise prices artificially. Market price support (MPS), may derive from a domestic price interventions (for example, a minimum-price policy), and is usually supported by foreign trade barriers such as a tariff or quantitative restriction on imports (GSI, unknown). Market price support can take several forms occurs when the domestic price of a product is higher than the world price as a result of government policy (OECD, 2013).

Source: Drawn from Jones and Steenblik (2010) and GSI (unknown)

Annex 2: Sources of subsidy estimation principles and methodologies

Category	Subsidy type	Sources for measurement methodologies and definitions
1. Direct transfer of funds	1.1 Grant	WTO, IASB, Canada, US, EC/India, FAO, OECD
	1.1 Other direct transfer of funds	WTO, FAO, WB
2. Credit-related subsidies	2.1 Interest rate subsidies	WTO and EC/India
	2.2 Preferential loans	US (*most detailed methodology*), WTO (calculations of benefit to recipient and cost to government of ordinary loans and contingent liability loans = reimbursable grant), OECD, EC, Canada, Korea, FAO
	2.3 Debt forgiveness	EC, WTO, US and WB
	2.4 Export insurance	US
	2.5 Loan guarantees and insurance programmes	USCBO – United States Congressional Budget Office (*most detailed methodology – includes option pricing*), WTO (*detailed background/concepts*), Canada, EC/India, FAO, OECD
3. Government equity participation	3.1 Government equity participation	OECD (*detailed calculation of net cost to Government of equity holdings of public authorities*), WTO, Canada, EC/India, FAO (*process for determining if an investment is commercial or not, and nationalisation*), US
4. Revenue forgone or not collected (tax expenditures)	4.1 General principles	WTO, Australia, Canada, OECD, (Koplow, 1993 – energy subsidies)
	4.2 Accelerated depreciation and other tax deferrals	OECD (*examples and calculations*), Canada (*methodology*), WTO, FAO, EC/India,
	4.3 Credits, refunds and exemptions from income tax	OECD (*calculations*)
	4.4 Exemptions and relief from indirect taxes	US Government (*detailed methodology*)
5. Government provision or purchase	5.1 Government provision of goods and services	EC/India (*methodology*), California water subsidies example, FAO (*examples of insurance and sector specific infrastructure – fisheries calculation*), OECD (*methodology – administered input prices*) US Government (*prices for exports*)
	5.2 Government purchase of goods	WTO, EC/India, Canada, Korea
6. Income or price support	6.1 Income or price support	FAO, OECD

Annex 3: Comparison of climate finance, fossil-fuel subsidies and emissions in developing countries

Figure A: Top 12 countries by climate finance (average 2010-2012)[1] ($ million)

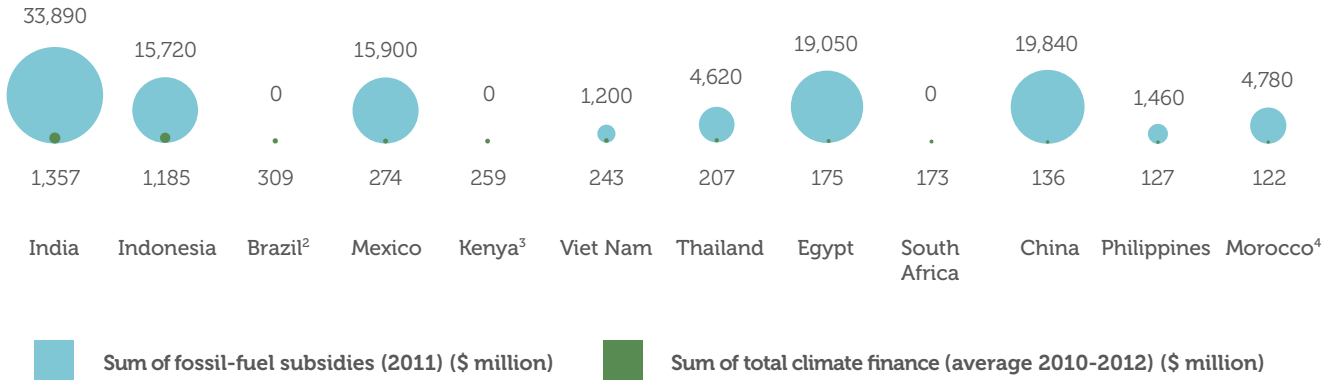
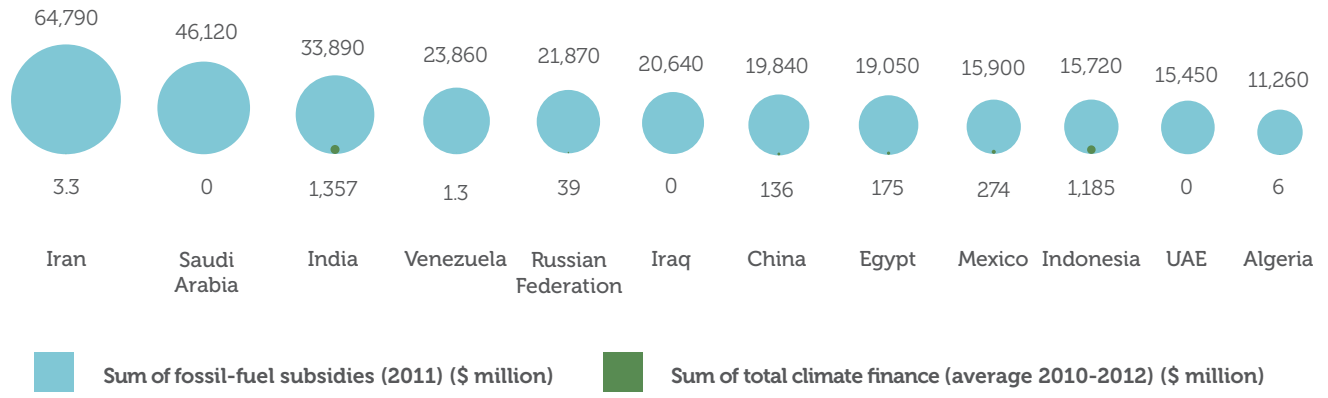


Figure B: Top 12 countries by consumer fossil-fuel subsidies (2011) ($ million)



Climate finance data sources:

1. ODI (2012).
   Fransen, Stasio and Nakhooda (2012) Excel database.
   Kuramochi, Shimziu, Nakhooda and Fransen (2012) Excel database.
   Climate finance data includes projects registered in Climate Funds Update (CFU) and projects financed bilaterally from the Fast Start Finance programmes of Japan and the US. Only single-country projects are included. Multiple, regional or global projects are excluded. Data from CFU is an aggregation of projects approved only in 2010, 2011 and 2012. Countries for which no climate finance has been recorded for the period 2010-2012 are marked as '0'.

   Fossil-fuel data source (except Brazil, Kenya and Morocco):
   OECD and IEA (2013).
   The IEA's analysis of energy subsidies utilises the price-gap approach, which compares the end-use prices paid by consumers with reference prices (i.e. prices that would prevail in a competitive market). The difference between the consumer price and the reference price is the price gap, and subsidy removal amounts to its elimination. For countries that import a given product, subsidy estimates derived through the price-gap approach are explicit. That is, they represent net expenditures resulting from the domestic sale of imported energy (purchased at world prices in hard currency), at lower, regulated prices. In contrast, for countries that export a given product – and therefore do not pay world prices – subsidy estimates are implicit and have no direct budgetary impact. Rather, they represent the opportunity cost of pricing domestic energy below market levels, i.e. the rent that could be recovered if consumers paid world prices. For countries that produce a portion of their consumption themselves and import the remainder, the estimates represent a combination of opportunity costs and direct government expenditures. Data presented includes oil, gas and coal consumer subsidies, and excludes consumer subsidies for electricity. Data for Brazil, Kenya, and Morocco referenced separately.

2. **Brazil:**
   Although Brazil does not currently record any on-budget fossil-fuel consumer subsidies, the government regulates the price at which the country's largest refining and distribution company, Petrobras (which has an effective national monopoly on the production of refined petroleum products, and in which the government holds a majority voting stake) can sell refined petroleum products. For 2011, Petrobras's Refining, Transportation and Marketing division recorded a net loss (after tax) of $5.73 billion (BRL 9.97 billion) (Petroleo Brasileiro S.A., 2012). The recorded loss for 2011 relates primarily to losses incurred on the import of refined products (Brazil currently has insufficient domestic refining capacity to meet demand), which retailed at an average 8% less than cost (Millard, 2012).

3. **Kenya** recorded no consumer fossil-fuel subsidies in 2011.

4. **Morocco**'s total on-budget ('Compensation Fund') subsidies for 2011 were recorded as MAD 48.83 billion ($5.69 billion), of which fossil-fuel subsidies accounted for 84% (or approximately MAD 41.02 billion ($4.78 billion)) (IMF, 2012) (IMF, 2011). Exchange rate as at 31/12/2011 (MAD 1 = $0.1166).

Annex 3: continued

Figure C: Fossil-fuel subsidies (2011) and climate finance (average 2010-2012) by region ($ million)

Countries for which no climate finance has been recorded for the period 2010-2012 are marked as '0'.

Annex 4: Links between subsidy categories and 'National Climate-finance Analyses'

Category	Subsidy type	Currently included within National Climate-finance Analyses (yes, no)
1. Direct transfer of funds	1.1 Grant	Yes (but not specifically those to private sector) – would need to be disaggregated
	1.1 Other direct transfer of funds	Yes (but not specifically those to private sector) – would need to be disaggregated
2. Credit-related subsidies	2.1 Interest-rate subsidies	Not a focus – may be reviewed if for public sector and climate specific
	2.2 Preferential loans	Not a focus – may be reviewed if for public sector and climate specific
	2.3 Debt forgiveness	Not a focus – may be reviewed if for public sector and climate specific
	2.4 Export insurance	No
	2.5 Loan guarantees and insurance programmes	No
3. Government equity participation	3.1 Government equity participation	Yes, in the context of reviews of State-owned Enterprise (SOE)
4. Revenue forgone or not collected (tax expenditures)	4.1 Accelerated depreciation and other tax deferrals	Not in short term (this may be included in reviews of sectors involving resource extraction – forestry, mining, oil)
	4.2 Credits, refunds and exemptions from income tax	Not in short term (this may be included in reviews of sectors involving resource extraction – forestry, mining, oil)
	4.3 Exemptions and relief from indirect taxes	Not in short term (this may be included in reviews of sectors involving resource extraction – forestry, mining, oil)
5. Government provision or purchase	5.1 Government provision of goods and services	Yes (but not specifically those to private sector) – would need to be disaggregated
	5.2 Government purchase of goods	Yes (but not specifically procurement from private sector) – would need to be disaggregated
6. Income or price support	6.1 Income or price support	Not a focus – may be reviewed from a policy perspective if climate specific

ODI is the UK's leading independent think tank on international development and humanitarian issues. Our mission is to inspire and inform policy and practice which lead to the reduction of poverty, the alleviation of suffering and the achievement of sustainable livelihoods. We do this by locking together high-quality applied research, practical policy advice and policy-focused dissemination and debate. We work with partners in the public and private sectors, in both developing and developed countries.

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